EXPLANATION OF EDITING SUGGESTED BY REILLY TAR & CHEMICAL CORPORATION ON MPCA'S MAY 14, 1985 DRAFT RAP

Sections 1.1. and 2.2. - Editing to tabulate advisory levels and criteria all in one place. Technical group as a whole agreed to this in concept.

Sections 3.5. and 4.3.5. - Changed date to March 15 to correspond to date of annual report required by the Consent Decree.

Sections 4.1.1. and 4.1.2. - Changed dates to keep Reilly from being caught by a date certain but no limit on approval time. Eliminated provision on initiationof testing within 90 days to be consistent with Sections 4.1.4. and 4.1.5.

Section 4.3.4. - Added clause to limit identification and quantification of non-routine compounds to those that are significant, as opposed to every single blip above the baseline.

Sections 4.1.2., 6.1.2., 7.1.2., 9.1.2. and 9.2.2. - Added clause to keep Reilly from being caught by permits and approvals being out of phase.

Section 7.5. - Changed limit on starting H3 to five years, which was as agreed in the 4/85 RAP drafts.

Sections 9.4.2., 9.5.1., 9.5.2., 9.7.3. - Edited objectives for Northern Area Drift-Platteville RI/FS in accordance with 5/15 discussions.

Sections 9.7.1. and 9.7.2. - Edited to clarify objectives of any contingent actions.

Sections 10.1.1., 10.2.1. and 10.3.1. - Edited to clarify objectives of pleans and investigations.

Section 12.2.5. - Added pursuant to 5/14 discussions.

Other changes are primarily editorial and their intent should be clear in context of our various discussions.

MPCA DRAFT 5/14/85
RT&CC EDIT 5/16/85

EXHIBIT A
REMEDIAL ACTION PLAN

INTRODUCTION AND PURPOSE.

The objectives of this remedial action plan (hereinafter referred to as RAP) are to accomplish the following: provide a safe drinking water supply in sufficient quantity for the city of St. Louis Park and surrounding communities; to control the spread of contamination by Chemical Substances in the Drift-Platteville, St. Peter, Prairie du Chien-Jordan, Ironton-Galesville, and Mount Simon-Hincklye aquifers resulting from activities at the former Republic Creosote site which was owned and operated by the Reilly Tar & Chemical Corp., and whose present ownership is described in part C of the Consent Decreee; to allow for the safe, reasonable, and beneficial use of the former Republic Creosote site and adjacent contaminated areas; and to preserve and protect ground water resources for present and future use.

These objectives will be accomplished by installation of a granular activated carbon (GAC) drinking water treatment system at St. Louis Park municipal wells numbers 10 and 15; a system of pumping wells designed to remove and/or control the flow of PAH contaminants in aquifers beneath St. Louis Park; remedial actions at and around the former Republic Creosote site which will reduce the infiltration of water, thus

controlling the movement of PAH from contaminated surficial geological deposits and allowing for safe use of the site and adjacent contaminated areas; monitoring of contaminants in all aquifers and in drinking water for St. Louis Park and selected neighboring communities to track their movement and monitor their occurrence in drinking water; and other actions which will be implemented if contaminants are found to move in a manner which is not anticipated at this time. The specifics of these actions are contained in this RAP.

1.

DEFINITIONS

As used in this RAP, the following words and phrases shall have these meanings:

1.1 Advisory level: In drinking water which has been treated to remove PAH or in water from an active drinking water well which is monitored in order to determine the need to provide treatment, a concentration of PAH equal to or in excess of a specified fraction of the drinking water criteria, which is used to trigger increased monitoring requirements.

1.2 Carcinogenic PAH: Those PAH compounds listed in Appendix A as being suspected human carcinogens, and PAH compounds added to this list pursuant to Part D. of the Consent Decree. For monitoring purposes, the concentration PAH shall be the sum of the concentrations of all compounds listed in parts A.1.1 and A.2 of Appendix A, plus any additional compounds added pursuant to Part D. of the Consent Decree.

1.3 City: The City of St. Louis Park, Minnesota

1.4 Commissioner: The Commissioner of the Minnesota Department of Health.

1.4a. Contamination and Contaminants: PAH and phenolics resulting from activities at the former Republic Creosote site when found in the ground water or the soil.

1.5 Day: When used in this RAP to indicate a deadline for a required action, a day shall mean a calendar day.

Whenever a submittal or action required by the RAP falls on a Saturday, Sunday or Minnesota State or federal legal holiday, the submittal or action shall be due upon the next following day of business.

1.6 Director: The Executive Director of the Minnesota Pollution Control Agency.

1.7 Effective Date: The effective date of the Consent Decree.

1.8 EPA: The United States EnvironmentalProtection Agency.

1.9 HRA: The Housing and Redevelopment Authority of St. Louia Park.

1.10 MDH: The Minnesota Department of Health.

1.11 MWCC: The Metropolitan Waste Control Commission.

1.12 Monitor: To collect a sample and analyze for PAH, as well as for any other parameters specified, in accordance with the sampling and analytical plans required under section 3 of this RAP.

1.13. MPCA: The Minnesota Pollution Control Agency.

1.14. Other PAH: PAH compounds other than those which are presently known to be suspected human carcinogens. For monitoring purposes, the concentration of other PAH is defined as the sum of the concentrations of all compounds listed in part A.1.2. of Appendix A.

1.15. PAH (polynuclear aromatic hydrocarbons): Chemical compounds consisting of carbon and hydrogen atoms

contained in two or more fused aromatic rings, with each ring consisting of five or six carbon atoms. This term also includes alkyl-substituted and hetrocyclic PAH (compounds in which one or more carbon atoms in a ring are replaced with nitrogen, oxygen, or sulfur atoms).

1.16. Phenolics: Aromatic organic compounds substituted with one or more hydroxyl groups, which are detected by the 4-aminoantipyrene method, EPA method 420.1 or 420.2 or other method as jointly approved by the Director and Regional Administrator in accordance with Part F of the Consent Decree.

1.17. Regional Administrator: The Regional Administrator of the EPA Region in which the site if located (currently Region V).

1.18. Reilly: The Reilly Tar & Chemical Corporation.

1.19. Site: The Republic Creosote site in St. Louis Park, operated by the Reilly Tar & Chemical Corp. from 1917 to 1972, whose legal descripition is given in part C.1. of the Consent Decree. The site is bounded by an imaginary line extending south from the terminus of Pennsylvania Avenue south of 31st street on the west; an imaginary line extending westward from the intersection of Louisiana Avenue and 32nd Street on the north; Louisiana Avenue from 32nd Street to Gorham Street, Gorham Street from Louisiana Avenue to 2nd Street NW, 2nd Street NW, 2nd Street NW from Gorham Street to

Republic Avenue, Republic Avenue from 2nd Street NW to 1st Street NW, and 1st Street NW from Republic Avenue to Walker Street on the east; and Walker Street on the south.

1.20. Total PAH: The sum of the concentrations of all carcinogenic and other PAH listed in parts A.1.1., A.1.2., and, if detected, part A.2. of Appendix A.

2.

GENERAL PROVISIONS

2.1 Well Numbering

Each well referenced in this RAP by a number preceded by "W" or "P" refers to the well identified by this unique number in the report, "Preliminary Evaluation of Ground-Water Contamination by Coal Tar Derivatives, St. Louis Park Area, Minnesota", by M. F. Hult and M. E. Schoenberg, United States Geological Survey, Water Supply Paper 2211, 1984, or otherwise assigned by the United States Geological Survey. Each well referenced in this RAP by a number preceded by "SLP" refers to the municipal water supply well of the City of St. Louis Park having this unique number. For convenience in this RAP and in subsequent reports, project numbers using the USGS numbering system may be assigned a new wells required by this RAP and to other wells not having a USGS designation. Wells not designated in this RAP may receive project numbers upon concurrence of all Project Leaders as defined in Part M. of the Consent Decree.

2.2 Drinking Water Criteria and Advisory Levels

The drinking water criteria and advisory levels defined below shall apply to drinking water which is treated to remove PAH and to ground water which is monitored as required by this RAP:

Parameter	Advisory Level	Drinking Water Criterion
Benzo(a)pyrene plus Dibenz(a,h)anthracene	3.0 ng/l*	5.6 ng/l
Carcinogenic PAH	15 ng/l	18 ng/l
Other PAH	175 ng/l	280 ng/l

* Or lowest concentration that can be quantified, whichever is greater.

The Commissioner may require that the use of any drinking water supply well whose water exceeds any of these criteria, as determined in accordance with Section 12.1, be discontinued until such time as the criteria are met by treatment or other means. Compliance with these criteria shall be determined at the point at which the water in question is introduced to the water supply distribution system but before dilution with water from any other source. The advisory levels for carcinogenic PAH and benzo(a)pyrene and dibenz(a,h)anthracene [] are used in Part 4. as operational and cessation criteria for drinking water treatment systems. The advisory levels [] are also used in this RAP to trigger increased monitoring requirements.

2.3 Quinoline

In the event quinoline is detected in any sample, and no other carcinogenic PAH compound listed in Parts A.1.1. and A.2 of Appendix A or added pursuant to part 1.2. above is detected in the same sample, it shall be limited under the criterion for "other PAH" compounds.

2.4 Well Construction and Abandonment

All Wells installed or abandoned in compliance with the requirements of this RAP shall be constructed or abandoned in accorddanceance with all applicable provisions of the MDH well construction code (Minn. Rules Parts 4259,2500-4250.3000 (1983) and future amendments thereto.

2.5 Surface Water Discharge Criteria

In each case where Reilly is required to obtain a National Pollutant Discharge Elimination System (NPDES) Permit for a surface water discharge which is part of a remedial action required by this RAP, the Director shall prepare a draft NPDES permit in accordance with Minn. Rules Part 7001.0100, subp. 2 (1984 Supp.). The draft permit shall contain the following effluent limitations:

Parameter	Daily maximum conc.	30-day average conc.
Carcinogenic PAH	---	311 ng/1
Other PAH	34 ug/1	17 ug/1
Phenanthrene	2 ug/1	1 ug/1
Phenolics	---	10 ug/1

These limitations may be adjusted in the draft permit to allow for dilution if the discharge is to a stream which does not have a seven day-ten year low flow (7010) of zero. The draft permit is subject to change in accordance with Minn. ?Rules Ch. 7001 (1984 Suppl.) the F.W.P.C.A. In the event the limitations are changed for any discharge required by this RAP, and the reasons for

changing the limitations are applicable to discharges for which NPDES permits are subjequently proposed in accordance with this RAP, the Director may propose these changed limitations in the subsequent permits. In the draft permit, the Director shall propose weekly monitoring for the first month, monthly monitoring for the next quarter, and quarterly monitoring thereafter.

2.6 Schedule for Contingencies

On or before the date specified in the RAP for a contingent action or, where no date is specified, not later than 90 days following joint notification by the Regional Administrator and Director that a contingent action is necessary, Reilly shall submit to the Regional Administrator and the Director a plan for the required contingent action, including design specifications and an implementation schedule. The Regional Administrator and the Director shall jointly review the plan in accordance with Part F. of the Consent Decree.

2.7 Plans and Submittals

All plans and submittals pursuant to this RAP are to be prepared and reviewed in accordance with the National Contingency Plan (40 CFR Part 300).

2.8 Special Analytical Service

Reilly shall provide the Director, the Commissioner, and the Regional Administrator the results of all monitoring

performed in response to an exceedance of advisory levels or drinking water criteria pursuant to Sections 4.3.1(B), 4.3.2., or 12.1 within 21 days of taking the samples.

3.

SAMPLING AND QUALITY ASSURANCE

3.1. Applicability

All monitoring required by the provisions of this RAP shall be done in accordance with approved plans, as required by this Section.

3.2 First Year Sampling Plan

Within 30 days of the effective date, Reilly shall submit to the Director and Regional Administrator a sampling plan for the Prairie du Chien-Jordan, Mt. Simon-Hinckley, Ironton-Galesville, St. Peter, and Drift-Platteville aquifers. The plan shall incorporate requirements of Sections 4.3., 5.1., 6.1., 7.3., 8.1.3., and 9.6 below, and shall indicate dates by which samples will be collected, analyzed and reported for all of the monitoring and municipal wells specified in this RAP or required to be specified by this RAP or required to be specified by this RAP. The plan shall include a detailed laboratory quality assurance/quality control plan and a summary of sampling and analytical procedures, including method detection limits for each procedure, to be followed in all analyses required by this RAP. Included in the plan shall be the name(s) of the primary laboratory(ies) which will be performing analyses, the name(s) of any other laboratory(ies) which may provide backup services, and the turnaround time(s)

(the time interval from receipt of samples to completion of analysis) which the primary laboratory has agreed to provide.

3.3 Plan Review

The Director and Regional Administrator shall jointly review the plan in accordance with Part F. of the Consent Decree.

3.4 Subsequent Sampling Plans

By October 31 of each year, beginning in 1985, Reilly shall submit to the Regional Administrator and the Director a sampling plan for the coming calendar year that meets the requirements of Section 3.2. In these subsequent plans, Reilly may propose to cease monitoring certain wells. The Director and Regional Administrator shall jointly review the plan in accordance with part F. of the Consent Decree.

3.5 Annual Report

By March 15 of each year, beginning in 1986, Reilly shall submit to the Director and Regional Administrator a report of the results of all monitoring during the previous calendar year. This report shall contain the following information for each aquifer sampled:

(A) Results of all water level measurements and chemical analyses.

(B) For each measuring period in the Prairie du ChienJordan, St. Peter, and Drift-Platteville aquifers, a water level contour map with elevations labeled at each well.

(C) For each sampling event, a map showing each well sampled with the concentrations of total other PAH, carcinogenic PAH and the sum of benzo(a)pyrene and dibenz(a,h)anthracene labeled by location of each well.

(D) For the Drift-Platteville, a discussion of the monitoring and water level results with respect to the effectiveness of the source and gradient control well systems.

4.

DRINKING WATER TREATMENT SYSTEM AT SLP 15/10

4.1. Design and Construction

4.1.1. Design

Within 15 days of the effective date, Reilly shall develop and submit to the Regional Administrator, the Director, and the Commissioner a complete design, including plans and specifications, for the construction of a granular activated carbon (GAC) treatment system at the St. Louis Park municipal drinking water wells SLP 10 and SLP 15, and shall submit applications for necessary permits. The Regional Administrator, the Director, and the Commissioner shall review the plan in accordance with Part F. of the Consent Decree.

4.1.2. Construction

Within 90 days of approval of the design and receipt of permits, whichever is later, Reilly shall fully construct [] the GAC treatment system in accordance with the approved design.

4.1.3. Design Criteria

The GAC water treatment system shall be designed and constructed by Reilly in accordance with the following criteria, which will satisfy the objectives of the EPA Record of Decision dated June 6, 1984.

Item	Design Value
Feed Water	Water from wells SLP 15 alone, SLP 10 alone, or SLP 10 and 15, after such waters have been treated in the existing pressure sand filters.
Flow Rate	1200 gpm capacity
Raw Water Concentration	Up to 20,000 ng/l total PAH
Treated Water PAH Concentration	Shall meet the drinking water criteria defined in Section 2.2. and shall be operated according to Section 4.3.2.
Building	The GAC system shall be enclosed within a building with heating, lighting, landscaping, and architectural design compatible with the existing treatment building at SLP 10 and 15.
Mini-columns	At least three mini-columns shall be installed within the GAC system building and shall be designed in such a manner as to allow testing of alternate carbons and/or predict breakthrough at conditions comparable to those in the full-scale system.
Space for Additional Carbon Column(s)	In the event that the GAC treatment system is designed to operate with carbon column(s) which may be required to be placed in series with the original columns pursuant to Section 4.5.

4.1.4. Inspection

Reilly shall provide written notification to the Regional Administrator, the Director, and the Commissioner within 3 days of completing construction of the GAC treatment system pursuant to the approved design. Following receipt of

such notification, the Regional Administrator, the Director, and the Commissioner shall inspect the system and Reilly shall demonstrate that the system has been constructed and operates in accordance with the approved design. This inspection shall not include demonstration of system performance, which is addressed by Section 4.1.3.

Section 4.1.3.

4.1.5. Testing

Within 60 days of completing construction, Reilly shall perform a two-week test of the GAC treatment system and submit a report to the Regional Administrator, the Director, and the Commissioner on the results of this test. During the testing period, treated water from the GAC system shall be discharged to a storm sewer and the system shall be monitored as required by Section 4.3. below. The test report shall identify any changes in the as-installed design from the approved design and shall include the following data from the test period: analytical results for all monitoring samples, system flow rates, pressure readings, observations of the operators, and any other information pertinent for evaluating the performance of the GAC treatment system.

4.1.6. Approval

Following inspection of the treatment system and submission of the testing report pursuant to Sections 4.1.4. and 4.1.5., respectively, the Regional Administrator, the

Director, and the Commissioner, in accordance with Part F. of the Consent Decree, shall jointly notify Reilly in writing as to whether the treatment system is approved or disapproved. When the treatment system is approved, Reilly shall operate and monitor the system in accordance with Sections 4.2. and 4.3. below.

4.2. Operation and Maintenance

4.2.1. Operating Rate

Reilly shall operate wells SLP 10 and/or SLP 15 and the GAC treatment system at a minimum annual pumping rate of 200 million gallons per year, with a minimum pumping rate of 10 million gallons in any calendar month, once the GAC system has achieved routine operation pursuant to Section 4.3.1.(B). Reilly shall not restrict the City's use of these wells up to the maximum flow rate of the GAC treatment system.

4.4.2. Operating Period

Reilly shall operate the GAC treatment system whenever wells SLP 10 and/or SLP 15 are used to supply the City's potable water distribution system until such time as the director and Regional Administrator approve discontinuing use of the system pursuant to Section 4.4. below.

4.2.3. Maintenance

Reilly shall maintain the GAC system in good working condition as required to achieve reliably treated water that meets the drinking water criteria, as determined by the monitoring required by Section 4.3. below.

4.2.4. Operation and Maintenance Plan Within 180 days of approval of the design, Reilly shall submit a plan to the Director, the Regional Administrator, and the Commissioner for the operation and maintenance fo the GAC treatment system. The Regional Administrator, the Director, and the Commissioner shall review the plan in acordance with Part F. of the Consent Decree.

4.2.5. Carbon Disposal

Reilly shall transport and dispose of or provide for the regeneration of spent carbon from the GAC treatment system in accordance with all applicable rules, regulations, laws, and ordinances.

4.3. Monitoring

4.3.1. Treated Water

Treated water from the GAC system shall be monitored as follows:

(A) During the testing period prior to hookup, Reilly shall monitor three times per week.

(B) During the first month following approval of the system and connection to the St. Louis Park drinking water distribution system, Reilly shall monitor weekly and submit the results to the Regional Administrator and the Director in accordance with Section 2.8. Thereafter, Reilly shall monitor monthly as described in (C) below.

In accordance with Part F. of the Consent Decree, the Regional Administrator and the Director shall jointly either (1) determine that the system is operating properly and authorize Reilly to continue the routine monitoring frequency described in (C) below; or (2) if the determination is made that the results do not indicate proper operation of the system, shall require Reilly to resume weekly monitoring for a period not to exceed two months or to remove the GAC system from the distribution system and conduct further testing of the system, modification of the system, or other action as required by the Regional Administrator and the Director.

(C) Routine monitoring shall be monthly until the carbon has been replaced twice. If advisory levels or drinking water criteria are exceeded during the first year of operation of the system, Reilly shall immediately notify the Regional Administrator, the Director, and the Commissioner, and shall submit a plan for such additional monitoring, testing, modification of the system, or other action as may be appropriate. The Regional Administrator,

Director, and the Commissioner shall review the plan in accordance with Part F. of the Consent Decree.

(D) Routine monitoring after two carbon changes shall be quarterly, unless the Regional Administrator, the Director, and the Commissioner jointly determine that the observed service life of the carbon is too short to permit this frequency, in which case the Director and Regional Administrator shall notify Reilly of the required monitoring frequency in accordance with Part F. of the Consent Decree.

4.3.2. Carbon Replacement Monitoring

(A) If the analytical results from any treated water sample obtained pursuant to Section 4.3.1. exceed the drinking water criterion for other PAH or exceed the advisory levels for carcinogenic PAH or benzo(a)pyrene and dibenz(a,h)anthracene, then Reilly shall collect two additional treated water samples at least 2 days apart within one week of receiving the results of the exceedance sample. If the analytical resutls from either one or both of the two additional samples also exceed the drinking water criterion for other PAH or the advisory levels for carcinogenic PAH or other benzo(a)pyrene and dibenz(a,h)anthracene, then the carbon shall be replaced

within 21 days of receiving the additional sample results. Nothing in this section shall be construed to prevent the Commissioner from directing that wells SLP 10 and/or 15 be removed from active service after exceedance of drinking water criteria for other PAH or advisory levels for carcinogenic PAH or penzo(a)pyrene and dibenz(a,h)anthracene is confirmed until carbon is replaced.

(B) If the analytical results from any treated water sample obtained pursuant to Section 4.3.1. exceed advisory levels for other PAH, then monitoring of treated water shall be conducted immediately according to Section 12.1. If the results of any two samples required by Section 12.1. exceed any of the drinking water criteria for PAH, then the carbon shall be replaced within 21 days of receiving the additional sample results.

(C) Following replacement of carbon, treated water shall be monitored weekly for one month and in accordance with the monitoring requirements of Section 4.3.1. thereafter.

4.3.3. Feed Water

Feed water to the GAC system (i.e. water treated by the existing pressure sand filters) shall be monitored at the same time as the effluent to the GAC system is monitored at the following intervals:

(A) During the testing period prior to hookup, feed water shall be monitored twice per week.

(B) During the first month after connection to distribution system, feed water shall be monitored biweekly.

(C) After the first month of operation, monitoring of feed water shall be performed quarterly until the carbon has been changed twice. If the Regional Administrator and the Director jointly determine pursuant to Section 4.3.1.(B) that the GAC system is not operating properly, Reilly may be required to resume biweekly sampling of feed water.

(D) After two carbon changes in the GAC system, feed water shall be monitored annually.

4.3.4. Extended Monitoring

At least one sample of treated water from the GAC system per year shall be monitored for the extended list of PAH in part A.2. of Appendix A below, using gas chromatography/mass spectroscopy (GC/MS), or other methods approved by the REgional Administrator and the Director. During this extended analysis, any compounds, other than those routinely analyzed for, which are detected with peak heights greater than 10 percent of the highest routinely monitored peak height, shall be identified and, if possible, quantified, using a mass spectral library which contains extensive spectra of PAH compounds, such as the National Bureau of Standards mass spectral library. Reilly shall analyze, at least one a year, a sample of treated or feed water for the acid fraction compounds determined by U.S. EPA Test Method 625 or by other methods approved by the Regional

Administrator and the Director, such as high performance liquid chromatography with electrochemical detection for the measurement of phenolic compounds.

4.3.5. Reporting

By March 15 of each year, beginning in 1986, Reilly shall submit to the Regional Administrator, Director, and Commissioner a report of the results of all monitoring of the GAC treatment system during the previous calendar year. This report shall contain the results of each analysis of feed water to and treated water from the GAC system and of wellhead water from SLP 10 and/or SLP 15, regardless of whether the analyses were required by this RAP. The report shall also describe briefly the operating performance of the GAC system during the previous calendar year.

4.4. Cessation

For purposes of this Section, the cessation criteria are defined as the mean plus one standard deviation of at least six consecutive feed water samples collected bimonthly being less than the drinking water criteria for PAH and the mean of such samples being less than the advisory levels for carcinogenic PAH and benzo(a)pyrene and dibenz(a,h)anthracene. Reilly may submit a request to the Regional Administrator, Director, and Commissioner documenting that the cessation criteria have been met and requesting that the GAC system operation be ceased. Approval of such a request shall not be

unreasonably withheld and any disputes shall be resolved in accordance with Part G. of the Consent Decree. Once operation is ceased, the former GAC system feed water (i.e., the effluent from the existing pressure sand filters) shall be monitored quarterly for two years and annually thereafter as long as results of wellhead monitoring at SLP 10 or SLP 15 required by Section 7.3. exceed drinking water criteria. If any results from this post-operation monitoring exceed an advisory level or drinking water criterion for PAH, then monitoring of the former feed water shall be conducted according to Section 12.1. and the GAC system shall be restarted if such monitoring yields three samples exceeding the drinking water criteria for PAH. Nothing in this agreement shall be construed to prevent Reilly or the City from operating the GAC treatment system after the cessation criteria have been met.

4.5 Contingent Actions

In the event that the first two carbon replacement intervals are both less than one year, the Regional Administrator and the Director may jointly require Reilly to add an additional carbon column(s) in series with the solumn(s) installed pursuant to Section 4.1. Within 60 days of receiving such notification Reilly shall submit to the Regional Administrator and the Director a design, a construction plan and schedule, an operation plan, and a monitoring plan for installing and operating additional carbon columns in series.

Reilly shall construct and operate such additional columns in accordance ith the design, plans and schedule approved jointly by the Regional Administrator and the Director in accordance ith Part F of the Consent Decree.

5.

Mount Simon-Hinckley Aquifer

5.1. Monitoring

Within 180 days of the effective date, Reilly shall monitor SLP 11, 12, 13 and 17, and these wells shall be monitored at least annually thereafter.

5.2. Contingent Additional Monitoring or Remedial Action

5.2.1. Existing Wells

If the analytical result of any monitoring required by Part 5.1. above is greater than the advisory level or drinking water criterion for carcinogenic PAH, benzo(a)pyrene and dibenz(a,h)anthracene, or other PAH, Reilly shall comply with the applicable requirements of Part 12.

5.2.2. New Wells

If any municipal drinking water supply well which withdraws water from the Mt. Simon-Hinckley aquifer is installed within one mile of the site, Reilly shall, following notification by the Commissioner of installation of the well, monitor the well at the time of its installation and annually thereafter. If the analytical result of any drinking water criteria for carcinogenic PAH, benzo(a)pyrene, or dibenz(a,h)anthracene, or other PAH, Reilly shall comply with the applicable requirements of Section 12.

6.

IRONTON-GALESVILLE AQUIFER

6.1. Source Control at W105

6.1.1. Plan

Within 60 days of the effective date, Reilly shall submit to the Regional Administrator and the Director a plan to use W105 as a pumping well with an untreated discharge to the sanitary sewer. At the same time, Reilly shall submit to the MWCC an application for a sanitary sewer discharge permit, and shall submit to the Commissioner of Natural Resources an application for a water appropriation permit.

6.1.2. Construction

Within 60 days of receiving the permits specified in Section 6.1.1. above and approval pursuant to Part F of the Consent Decree, whichever is later, Reilly shall complete installation of a pump and piping necessary for connection of W105 to the sanitary sewer.

6.1.3. Pumping

Within 5 days of completing construction as specified in Section 6.1.2. above, Reilly shall commence pumping W105 at a monthly average rate of 25 gallons per minute.

6.1.4. Monitoring

Reilly shall monitor W105 quarterly for the first year of pumping and biannually thereafter. Water levels in W105 and W38 (the Milwaukee Road railroad well) shall be measured by Reilly each time W105 is sampled.

6.1.5. Cessation

The criterion for cessation of pumping W105 is defined as the mean plus one standard deviation of at least four consecutive samples collected quarterly being less than 10 micrograms per liter total PAH. Nothwithstanding this cessation criterion, the well shall be pumped for a minimum of two years. Reilly may submit a request to cease pumping W105 to the Regional Administrator and the Director with the data required to document compliance with the cessation criterion. Review of the request shall be in accordance with Part F. of the Consent Decree and approval shall not be unreasonably withheld. Reilly shall monitor W105 quarterly for the first year after pumping is stopped and biannually thereafter. If any result of such continued monitoring shows total PAH greater than 10 micrograms per liter, Reilly shall collect two additional samples within one month of the first result. If either of the two additional samples exceeds 10 micrograms per liter total PAH, then Reilly shall restart pumping of W105 as required by Section 6.1.3. Nothing in this Agreement shall be construed to prevent Reilly or the City from Pumping W105 after the cessation criterion is met.

6.2. Contingent Actions

6.2.1. Contingent Additional Monitoring or Remedial Action

If any municipal drinking water supply well which withdraws water from the Ironton-Galesville aquifer is

installed within one mile of the site, Reilly shall, following notification by the Commissioner of installation of the well, monitor the well at the time of its installation and annually thereafter. If the analytical result of any monitoring as required above is greater than the advisory level or drinking water criteria for carcinogenic PAH, benzo(a)pyrene and dibenz(a,h)anthracene, or other PAH, Reilly shall comply with the applicable requirements of Section 12.

6.2.2. Reimbursement for Additional Expenses In the event any person who submits plans to the MDH for installation of a new well in St. Louis Park or Hopkins in the Mt. Simon-Hinckley aquifer is required by the MDH to safeguard against the spread of contamination from the Ironton-Galesville to the Mt. Simon-Hinckley aquifer through the use of measures such as additional casings or larger drill hole, Reilly shall pay this person the incremental costs incurred for complying with the requirements of the MDH.

7.

PRAIRIE DU CHIEN-JORDAN AQUIFER

7.1. Source Control At W23

7.1.1. Plan

Within 60 days of the effective date, Reilly shall submit to the Director and Regional Administrator a plan to reconstruct W23 as a pumping well with an untreated discharge to the sanitary sewer. At the same time, Reilly shall submit to the MWCC an application for a sanitary sewer discharge permit, and shall submit to the Commissioner of Natural Resources an application for a water appropriation permit.

7.1.2. Construction

Within 30 days of receiving permits specified in Section 7.1.1. above and approval pursuant to Part F. of the Consent Decree, whichever is later, Reilly shall complete construction of W23 as a Prairie du Chien-Joran well.

7.1.3. Pumping

Within 5 days of completing construction as specified in Section 7.1.2., Reilly shall commence pumping W23 at an monthly average rate of 50 gallons per minute.

7.1.4. Cessation

The criterion for cessation of pumping W23 is defined as the mean plus one standard deviation of at least six consecutive samples collected bimonthly being less than 10

micrograms per liter total PAH. Notwithstanding this cessation criterion, the well shall be pumped for a minimum of five years. Reilly may submit a request to cease pumping W23 to the Regional Administrator and the Director with the data required to document compliance with the cessation criterion. Review of the request shall be in accordance with Part F of the Consent Decree and approval shall not be unreasonably withheld. Reilly shall monitor W23 quarterly for the first year after pumping is stopped and semiannually thereafter. If any result of such continued monitoring shows total PAH greater than 10 micrograms per liter, Reilly shall collect two additional samples within one month of the first result. If either of the two additional samples exceeds 10 micrograms per liter total PAH, then Reilly shall restart pumping of W23 as required by Section 7.1.3. Nothing in this Agreement shall be construed to prevent Reilly or the City from pumping W23 after the cessation criterion is met.

7.2. Gradient Control

7.2.1. Feasibility Study Plan

Within 30 days of the effective date, Reilly shall submit to the Director and Regional Administrator a plan for a feasibility study for discharge of 1000 gallons per minute of water from SLP 4. This study shall examine the feasibility of discharging water from SLP 4 to surface waters, and shall include consultation with governmental entities responsible for

the management of the surface water bodies which are considered. [] The Director and Regional Administrator shall jointly review the plan for this study inaccordance with Part F. of the Consent Decree.

7.2.2. Feasibility Study Results Within 90 days of receiving approval of the plan, Reilly shall submit to the Director and Regional Administrator a report summarizing the results of the study referenced in 7.2.1. above, and which contains recommendations for disposition of water pumped from SLP 4 for gradient control. The Director and Regional Administrator shall jointly review the study in accordance with Part F. of the Consent Decree. At the same time, Reilly shall submit an application for an NPDES permit for a discharge from SLP 4. The Director shall draft and notice the NPDES permit is accordance with Section 2.6.

7.2.3. Treatment

Within 30 days of the date of issuance of the required NPDES permit, if treatment of the effluent from SLP 4 will be required in order to meet effluent limitations specified in the NPDES permit for PAH or phenolics, Reilly shall submit to the Director and the Regional Administrator a plan for treatment of the effluent in order to meet effluent limitations. The Director and Regional Administrator shall jointly review the plan in accordance with Part F. of the Consent Decree.

7.2.4. Completion

Within 60 days of the date of issuance of the required NPDES permits, Reilly shall complete connection of SLP 4 to the point of discharge, unless the NPDES permit issued for this discharge requires treatment of the discharge, in which event Reilly shall complete installation of the treatment system and connection of SLP 4 to the point of discharge within 120 days of the date of issuance of the NPDES permit.

7.2.5. Gradient Control Monitoring Wells Within 30 days of submitting the report on the Feasibility Study required by Section 7.2.2., Reilly shall submit to the Director and Regional Administrator plans for construction of one to three monitoring wells. The wells, which shall be designated by the project numbers indicated in brackets below, shall be completed in the Prairie du Chien-Jordan aquifer and shall have a minimum diameter of four inches. The wells shall be located near the following locations (these are locations of parks or golf courses): the terminus of Homedale Avenue south of Goodrich Street in Hopkins (Interlachen Park) [W401]; Colgate and Drew Avenues in Edina (Waveland Park) [W402]; and France Avenue at West 38th Street in Minneapolis [W403]. The plan may substitute existing wells located within 2500 feet of the locations specified for these new wells, provided that the plan includes the results of an investigation of these alternative wells which shows that they are presently in, or can be

upgraded to, a condition capable of producing water level and water quality information representative of only the Prairie du Chien and Jordan formations, and that they will be accessible for monitoring and water level measurements at the required intervals. The Director and Regional Administrator shall review the plan in accordance with Part F. of the Consent Decree. Within 10 days following joint approval of the plan by the Regional Administrator and the Director, Reilly shall submit applications as needed to the appropriate local units of government for well construction permits. In the event the Commissioner or a local unit of government requires substantial changes in the well construction or location from that in the approved plan, Reilly shall so notify the Director and Regional Administrator within 3 days. The Director and Regional Administrator shall then make any required changes to the previously approved plan.

7.2.6. Completion of Well Construction Within 60 days of receipt of permits and approvals pursuant to Section 7.2.5., Reilly shall complete construction of reconstruction of any wells approved pursuant to Section 7.2.5.

7.2.7. Operation

Within 5 days of completing connection of SLP 4 to surface water, Reilly shall commence operation of the gradient control system, and shall pump SLP 4 at its capacity (900 gallons per minute or as near as practicable) from October

through April and 300 gallons per minute from May through September. The pumping rate may be adjusted upward or downward by as much as 250 gallons per minute upon joint agreement of the City, Reilly, the Director, and the Regional Administrator.

7.2.8. Use of SLP 4 for Drinking Water Supply Reilly may request of the Commissioner that all or portions of the discharge from SLP 4 be added to the City's potable water distribution system at any time after (1) Reilly has submitted to the Director, Commissioner, and Regional Administrator plans for a treatment system at SLP 4 capable of treating water to below drinking water criteria as defined in Section 2.2., and these plans have been approved pursuant to Part F. of the Consent Decree; or (2) after Reilly has provided the Commissioner with documentation that the mean plus one standard deviation of at least six consecutive samples collected bimonthly is less than the drinking water criteria for PAH. The Commissioner shall not unreasonably withhold approval of such a request. Notwithstanding such use of SLP 4, Reilly shall continue to pump the well at the rate required by Section 7.2.7. until the requirements of Section 7.2.9. are met.

7.2.9. Cessation

Reilly may submit a request to the Regional Administrator and the Director to cease operating SLP 4 when monitoring results obtained pursuant to Section 7.3. at SLP 4 and at all wells which are north of an imaginary east-west line

through W48, including W48 but excluding W23, are less than drinking water criteria for PAH for two consecutive years. Approval of such a request shall not be unreasonably withheld. Notwithstanding this cessation criterion, SLP 4 shall be pumped for a minimum of five years. Nothing in this Agreement shall be construed to prevent Reilly or the City from operating the gradient control system after the cessation criterion is met.

7.3. Monitoring

Reilly shall monitor wells in the Prairie du ChienJordan aquifer in accordance with a sampling plan submitted to and jointly approved by the Regional Administrator and the Director as specified by part 3. Except as otherwise approved by the Director and Regional Administrator in accordance with Part F. of the Consent Decree, sampling plans for the Prairie du Chien-Jordan aquifer shall provide for monitoring and water level measurements in the following wells as indicated: (A) Prairie du Chien-Jordan gradient control wells (as set forth in 7.2. above and 7.4.1. below) shall be monitored quarterly for the first year from the effective date and semiannually thereafter, or as required by the NPDES permit, whichever is more frequent;

(B) W23 shall be monitored quarterly for the first year of pumping, and semiannually thereafter.

(C) The following wells shall be monitored quarterly for five years from the effective date of the Consent Decree, and annually thereafter:

(i) W48

(ii) SLP 6

(iii) SLP 7 or 9

(D) The following wells shall be monitored semiannually for the first five years from the effective date of the Consent Decree, and annually thereafter:

(i) American Hardware Mutual or Minikahda Golf Course

(ii)

(iii) NON-RESPONSIVE

(iv)

(v) SLP 10 or 15

(vi) SLP 14

(vii) SLP 16

(viii) W402 or substitute well pursuant to Section 7.2.5.

(ix) W403 or substitute well pursuant to Section 7.2.5.

(x) W119

(E) The following wells shall be monitored annually:

(i) SLP 5

(ii)

(iii) NON-RESPONSIVE

(iv)

(v)

(vi) W29

(vii) W40

(viii) W70

(ix) W401 or substitute well pursuant to Section 7.2.5.

(F) Water levels shall be measured quarterly for five years from the effective date and semiannually thereafter at all wells specified in (A) through (E) above, except for those wells which prove to be inaccessible for such measurements, and at the following wells:

(i) W112

(ii) W32

(iii) SLP8

(iv) SLP10

(v) [redacted]

(vi) [redacted]

NON-RESPONSIVE

(G) Municipal drinking water supply wells listed in Paragraphs (C), (D), and (E) above shall be monitored prior to any treatment in place at the well.

7.4. Contingent Actions

7.4.1. Gradient Control System Modification

The Director and Regional Administrator shall review all monitoring and other data pertinent to the operation of the gradient control well system described in this Section and, at any time after sufficient information is obtained on the distribution of contaminants and performance of the gradient control system, may notify Reilly that it must submit a plan for gradient control system modification in order to prevent spread of ground water exceeding the drinking water criteria

for PAH defined in Section 2.2. These modifications may include alteration of specified pumping at gradient control wells, additional gradient control wells, or returning to service former gradient control wells which have been shut down pursuant to Section 7.2.9. With the plan required by this Section, Reilly shall submit proposed cessation criteria consistent with the objective of attaining drinking water criteria specified in Section 2.2. in the Prairie du Chien-Jordan aquifer for the capture area(s) of any new gradient control well(s) which it proposes. In its plan, Reilly may consider the feasibility of utilizing higher pumping rates at nearby existing industrial or commercial wells if possible. The Director and Regional Administrator shall review the plan in accordance with Part F. of the Consent Decree. Reilly shall obtain such permits as may be necessary in order to implement any such gradient control system modifications.

7.4.2. W48 Pumping Rate

If changes in the rate of usage of ground water from W48 result in a significant reduction in the pumping rate, Reilly shall make its best effort to ensure that the pumping rate is maintained at levels adequate to maintain effective operation of the gradient control system. This may include obtaining an access agreement pursuant to Part N. of the Consent Decree. If Reilly is unable to make such arrangements, the Director and Regional Administrator shall assess the effect

of diminution of this pumping stress, and may jointly require gradient control system modifications pursuant to Section 7.4.1.

7.4.3. Treatment

If the concentration of carcinogenic or other PAH or phenolics measured at SLP 4, W48, or any other gradient control wells installed in accordance with 7.4.1. above exceed the applicable NPDES permit discharge limitations for PAH or phenolics, Reilly shall immediately undertake a sampling program at the affected well. This program shall consist of at least six samples taken one week apart. Upon completion of this program, Reilly shall submit all results to the Director and Regional Administrator. If the mean of these samples exceeds the applicable NPDES permit discharge limitation, Reilly shall within 90 days of submitting the test program results submit a plan for construction and operation of a treatment system at the affected well. The plan shall be jointly reviewed by the Regional Administrator and the Director in accordance with Part F. of the Consent Decree. Following approval of this plan, Reilly shall install the treatment system and shall operate the system until the results of one year of monitoring of untreated water at the affected well meet the applicable surface water discharge criteria. Reilly may then request authorization to discontinue treatment from the Regional Administrator and the Director pursuant to Part F. of the Consent Decree.

7.4.4. Contingent Additional Monitoring or Remedial Action

If the analytical result of monitoring of any active municipal water supply well as required by 7.3. above is greater than the advisory level or drinking water criterion for carcinogenic PAH, benzo(a)pyrene and dibenz(a,h)anthracene, or other PAH, Reilly shall comply with the applicable requirements of part 12.

8.

ST. PETER AQUIFER

8.1. Remedial Investigation

8.1.1. Remedial Investigation Plan Within 30 days of the effective date, Reilly shall submit to the Regional Administrator and the Director a plan for sampling wells and for installation of at least five new monitoring wells to determine the nature and extent of contamination in the St. Peter aquifer. The plan shall specify well location and design. The Director and the Regional Administrator shall jointly review the plan in accordance with Part F. of the Consent Decree.

8.1.2. Monitoring Well Construction Within 120 days of receiving approval pursuant to Part F. of the Consent Decree, Reilly shall complete construction of the new monitoring wells.

8.1.3. Monitoring

Within 30 days of completing the monitoring wells pursuant to Section 8.1.2., Reilly shall collect samples for PAH monitoring and measure water levels at the five new monitoring wells and at wells W14, W24, W33, W122, W129, W133, P116, and SLP 3. Well SLP 3 and at least six other St. Peter wells shall be re-sampled for PAH monitoring within 6 months of the first sampling round, and again within 12 months of the first sampling round.

8.1.4. Remedial Investigation Report Within 90 days of completing the second monitoring round pursuant to Section 8.1.3. above, Reilly shall submit to the Regional Administrator and the Director a report that summarizes the results of the St. Peter remedial investigation.

8.2. Feasibility Study

8.2.1. Feasibility Study Plan

Upon completion of the remedial investigation report required by Section 8.1, the Regional Administrator and Director may jointly determine that a feasibility study is requried of potential remedial actions for the St. Peter aquifer. Reilly shall submit a plan for a feasibility study to the Regional Administrator and Director within 30 days of receiving joint notice that a feasibility study is required. The Regional Administrator and the Director shall review the plan in accordance with Part F. of the Consent Decree.

8.2.2. Feasibility Study Report

Reilly shall submit a report to the Regional Administrator and the Director on the results of the St. Peter feasibility study within 90 days of receiving approval of the feasibility study plan. The report shall identify and evaluate a range of remedial action alternatives for controlling the spread of water in the St. Peter aquifer that exceeds the drinking water criteria defined in Section 2.2. [], including the alternative of continued monitoring of the St. Peter.

8.3. Remedial Actions

Upon completion of the feasibility study required by Section 8.2. above, the Regional Administrator and the Director may, for the purpose of preventing the further spread of ground water exceeding the drinking water criteria defined in Section 2.2., [], jointly require Reilly to install and operate a gradient control well system consisting of one or two gradient control wells. Reilly shall submit to the Director and Regional Administrator within 90 days of such notification a plan for a gradient control system. The Director and Regional Administrator shall review the plan in accordance with Part F. of the Consent Decree. Reilly shall implement the plan in accordance with the plan as approved by the Regional Administrator and the Director.

Cessation = PdC/T agents -

8.4. Contingent Actions

If the analytical result of monitoring any active drinking water well in the St. Peter aquifer is greater than the advisory level or drinking water criterion for carcinogenic PAH, benzo(a)pyrene and dibenz(a,h)anthracene, or other PAH, Reilly shall comply with the applicable requirements of part 12.

9.

DRIFT AND PLATTEVILLE AQUIFERS

9.1. Source Control

9.1.1. Plan

Within 60 days of the effective date, Reilly shall submit to the Regional Administrator and the Director a plan for installing a source control well system in the Drift-Platteville aquifer. The plan shall specify:

(A) the location, design, and operation of two source control wells, one completed in the drift and one in the Platteville, each located within 500 feet downgradient of monitoring well W13, and each capable of controlling the flow from beneath an area defined by Walker Street on the north, Temporary Louisiana Avenue on the east, Lake Street and South Frontage Street Extension on the south, and a north-south line extending from the intersection of Walker Street and West 37th Street on the west;

(B) the location and design of piping to connect the discharge of the two source control wells to the sanitary sewer; and

(C) the procedures to be used in conducting a pumping test at each well, using at least two observation wells per test. At the same time, Reilly shall

submit to the MWCC an application for a sanitary sewer discharge permit and shall submit to the Commissioner of Natural Resources an application for a water appropriation permit. The Regional Administrator and the Director shall jointly review the plan in accordance with Part F. of the Consent Decree.

9.1.2. Construction

Within 120 days of receiving necessary permits and approval of the plan as specified in Section 9.1.1., which ever occurs last, Reilly shall complete all construction and testing in accordance with the approved plan and shall submit a report to the Regional Administrator and the Director which presents logs for the well installations, results of the pump tests, and any field adjustments to the approved design.

9.1.3. Operation and Monitoring

Within 10 days of completing construction as specified in Section 9.1.2., Reilly shall begin to pump each source control well at [] monthly average rate of 25 gallons per minute with discharge to the sanitory sewer. Reilly shall monitor the discharge from each well quarterly for phenolics and PAH.

9.1.4. Cessation

Reilly may submit a request to cease operating the Drift-Platteville source control system installed in accordance

with Section 9.1.2 and 9.1.3. when the Drift-Platteville source control system is no longer required to control the source of contamination in the area defined in Section 9.1.1.(A) []. Review of the request shall be in accordance with Part F. of the Consent Decree and approval shall not be unreasonably withheld. Notwithstanding the foregoing, Reilly shall operate the Drift-Platteville source control system for at least five years.

9.2. Gradient Control

9.2.1. Plan

Within 60 days of the effective date, Reilly shall submit to the Regional Administrator and the Director a plan for installing a gradient control well system in the Drift-Platteville aquifer. The plan shall specify:

(A) the location, design, and operation of a gradient control well completed in the drift located within 500 feet of monitoring well W12;

(B) the location and design of piping to connect the discharges of the gradient control well to the sanitary sewer; and

(C) the procedures to be used in conducting a pumping test at this well, using at least two observation wells per test. At the same time, Reilly shall submit to the MWCC an application for a sanitary sewer discharge permit and shall submit to the

Commissioner of Natural Resources an application for a water appropriation permit. The Regional Administrator and the Director shall jointly review the plan in accordance with Part F. of the Consent Decree.

9.2.2. Construction

Within 120 days of receiving necessary permits and approval of the plan as specified in Section 9.2.1., whichever occurs last, Reilly shall complete all construction and testing in accordance with the approved plan and shall submit a report to the Regional Administrator and Director which presents the log for the well installation, results of the pump tests, and any field adjustments to the approved design.

9.2.3. Operation and Monitoring

Within 10 days of completing construction as specified in Section 9.2.2., Reilly shall begin to pump the gradient control well at [] monthly average rate of 50 gallons per minute with discharge to the sanitary sewer. Reilly shall monitor the discharge from the well quarterly for phenolics and PAH.

9.2.4. Cessation

Reilly may submit a request to cease operating the Drift-Platteville gradient control system installed in accordance with Sections 9.2.2. and 9.2.3. when the Drift-Platteville gradient control system is no longer required

area defined by the

to limit the spread of contamination into the buried bedrock valley as mapped by Hult and Schoenberg in USGS Water Supply Paper 2211, Plate 2. Review of the request shall be in accordance with Part F. of the Consent Decree and approval shall not be unreasonably withheld. Notwithstanding the foregoing, Reilly shall operate the Drift-Platteville gradient control system for at least five years.

9.3. Northern Area Remedial Investigation

9.3.1. Remedial Investigation Plan Within 60 days of the effective date, Reilly shall submit to the Regional Administrator and the Director a plan for installing additional monitoring wells in the Drift-Platteville aquifer to further define the nature and extent of contamination. The plan shall specify six wells completed in the drift or Platteville aquifers within an area bounded by West 32nd Street to the north, Alabama Avenue to the east, Highway 7 to the south, and Louisiana Avenue to the west. The Regional Administrator and Director shall jointly reivew the plan in accordance with Part F. of the Consent Decree.

9.3.2. Monitoring Well Construction Within 60 days of receiving approval pursuant to Part F.
of the Consent Decree, Reilly shall complete construction of the new monitoring wells.

9.3.3. Monitoring

Within 30 days of completing the monitoring wells pursuant to Section 9.3.2., Reilly shall collect samples for

PAH and phenolics monitoring and measure water levels at the new monitoring wells and at wells W136 and W131. These wells shall be re-sampled for PAH and phenolics monitoring within 6 months of the first sampling round.

9.3.4. Remedial Investigation Report Within 90 days of completing the second monitoring round pursuant to Section 9.3.3. above, Reilly shall submit to the Regional Administrator and the Director a report that summarizes the results of the Drift-Platteville remedial investigation.

9.4. Northern Area Feasibility Study

9.4.1. Feasibility Study Plan

Within 30 days of completion of the remedial investigation required by Section 9.3., Reilly shall submit a plan for a feasibility study to the Regional Administrator and Director. The Regional Administrator and the Director shall review the plan in accordance with Part F. of the Consent Decree.

9.4.2. Feasibility Study Report

Reilly shall submit a report on the results of the Drift-Platteville feasibility study within 90 days of receiving approval of the feasibility study plan. The report shall identify and evaluate a range of remedial action alternatives for limiting the further spread of contamination located within the area defined in Section 9.3.1. above [], including the alternative of continued monitoring of the Draft-Platteville.

9.5. Northern Area Remedial Actions

9.5.1. Implementation Upon completion of the feasibility study required by Section 9.4. above, the Regional Administrator and the Director may, for the purpose of limiting the further spread of any contamination located within the study area defined in Section 9.3.1. above, [], jointly require Reilly to implement a remedy of one or more gradient control wells. Reilly shall submit to the Regional Administrator and the Director within 90 days of such notification a plan for the remedy. The Director and Regional Administrator shall review the plan in accordance with Part F. of the Consent Decree. Reilly shall implement the plan in accordance with the plan as approved by the Regional Administrator and the Director.

9.5.2. Cessation

Reilly may submit a request to cease operating the Northern Drift-Platteville area remedy installed in accordance with Section 9.5.1. when operation of this remedy is no longer required to limit the spread of contamination located within the study area described in 9.3.1. above. Review of the request shall be in accordance with Part F. of the Consent Decree and approval shall not be unreasonably withheld.

9.6. Monitoring.

The annual sampling plan required by Sections 3.2. and 3.4. shall be designed to assess changes in the extent of contamination and to evaluate the effectiveness of the source

and gradient control well systems and any other remedy implemented in the Drift-Platteville aquifer. For the first year, Drift-Platteville monitoring shall consist of semi-annual monitoring of at least 30 wells for phenolics and PAH. Thereafter, at least 20 wells shall be monitored biannually for phenolics and PAH. Two of the above sampling events shall be conducted concurrently with the Northern Area remedial investigation required by Section 9.3.1. Reilly shall measure water levels in the sampled wells whenever monitoring samples are collected.

9.7. Contingent Actions

9.7.1. Source Control Contingencies The Regional Administrator and the Director shall jointly review all monitoring or other data pertinent to the operation of the source control well system and the movement of PAH and phenolic contaminants in the Drift-Platteville, and, at any time after at least three rounds of monitoring, may require Reilly to install additional source control wells or to modify the operation of the source control well system installed pursuant to Section 9.1. above, in order to control the source of contamination in the area defined in Section 9.1.1(A). Any such further remedial action(s) required by the Regional Administrator and the Director shall be the most cost-effective alternative(s) in accordance with the National Contingency Plan (40 CFR Part 300). Within 90 days of notification of such a

determination by the Regional Administrator and the Director, Reilly shall submit to the Regional Administrator and the Director a plan and schedule for implementing the action(s). The Regional Administrator and the Director shall jointly review this plan in accordance with Part F. of the Consent Decree. Following approval of this plan, Reilly shall implement the requested action(s) in accordance with the approved plan. Nothing in this Agreement shall prevent Reilly from requesting the Regional Administrator and the Director to allow modifications to the operation of the source control well system installed and operated pursuant to Section 9.1. above.

9.7.2. Gradient Control Contingencies The Regional Administrator and the Director shall jointly review all monitoring or other data pertinent to the operation of the gradient control well system and the movement of PAH and phenolic contaminants in the Drift-Platteville, and, at any time after at least three rounds of monitoring, may require Reilly to install additional pumping wells in the Drift-Platteville or to modify the operation of the gradient control well system installed and operated pursuant to Section 9.2. above, [] in order to prevent the spread of contamination ~~into~~ the area defined by the buried bedrock valley as mapped by Hult and Schoenberg in USGS Water Supply Paper 2211, Plate 2. Any such further remedial action(s) required by the Regional Administrator and the Director shall be the most cost-effective alternative(s) in

accordance with the National Contingency Plan (40 CFR Part 300). Within 9. days of notification of such a determination by the Regional Administrator and the Director, Reilly shall submit to the Regional Administrator and the Director a plan and schedule for implementing the action(s). The Regional Administrator and the Director shall jointly review this plan in accordance with Part F. of the Consent Decree. Following approval of this plan, Reilly shall implement the requested action(s) in accordance with the approved plan. Nothing in this Agreement shall prevent Reilly from requesting the Regional Administrator and the Director to allow modifications to the operation of the gradient control well system installed and operated pursuant to Section 9.2. above.

9.7.3. Northern Area Remedy Contingencies The Regional Administrator and the Director shall jointly review all monitoring or other data pertinent to the remedy implemented pursuant to Section 9.5. above and the movement of PAH and phenolic contaminants in the Drift-Platteville, and, at any time after at least three rounds of monitoring, may require Reilly to install additional pumping wells or otherwise modify the remedy installed and operated pursuant to Section 9.4. above in order to limit the further spread of any contamination located within the area defined in Section 9.3.1. Any such further remedial action(s) required by the Regional Administrator and the Director shall be the most cost-effective

alternative(s) in accordance with the National Contingency Plan (40 CFR Part 300). Within 90 days of notification of such a determination by the Regional Administrator and the Director, Reilly shall submit to the Regional Administrator and the Director a plan and schedule for implementing the action(s). The Regional Administrator and Director shall jointly review this plan in accordance with Part F. of the Consent Decree. Following approval of this plan, Reilly shall implement the requested action(s) in accordance with the approved plan. Nothing in this Agreement shall prevent Reilly from requesting the Regional Administrator and the Director to allow modifications to the operation of the gradient control well system installed and operated pursuant to Section 9.5. above.

10.

LEAKING MULTI-AQUIFER WELLS

10.1. Multi-acuifer Wells Open to the Mt. Simon-Hinckley, Ironton-Galesville, or Prairie du Chien-Jordan Aquifers

10.1.1. Investigation Plan

Within one year of the effective date, Reilly shall submit to the Regional Administrator and the Director a plan for investigating suspected multi-aquifer wells, [] which may be leaking water exceeding drinking water criteria for PAH or 10 micrograms per liter phenolics into the Mt. Simon-Hinckley aquifer, the Ironton-Galesville aquifer, or areas of the Prairie du Chien-Jordan aquifer located outside of the capture area of the Prairie du Chien-Jordan aquifer gradient control system operated pursuant to Section 7.2., and, if applicable, Section 7.4.1. For purposes of this section, the southern boundary of the Prairie due Chien-Jordan aquifer gradient control well system capture area is defined as Excelsior Boulevard west of Highway 169/100 and West 42nd Street east of Highway 169/100; the eastern boundary as France Avenue; the northern boundary as a line extending from well SLP 7 to the intersection of France Avenue and Minnetonka Blvd. and west from SLP 7 to Hennepin County Road 18; and the western boundary as Hennepin County Road 18. The plan shall describe the

investigation techniques to be used, which shall include at a minimum for each well: static water level measurements, water quality monitoring, spinner logging, caliper logging, and E- or gamma logging. Additional techniques, such as down-hole TV logging, may also be used. The Regional Administrator and Director shall jointly review the plan in accordance with Part F. of the Consent Decree.

10.1.2. Investigation and Report

Within one year of approval of the investigation plan pursuant to Section 10.1.1., Reilly shall complete a multi-aquifer well investigation in accordance with the approved plan and shall report the findings to the Regional Administrator and the Director and recommend which leaking multi-aquifier wells, if any, should be abandoned or reconstructed.

10.1.3. Report Evaluation

For any of the wells investigated pursuant to Section 10.1.1. which display interaquifer flow of water which exceeds drinking water criteria for PAH or 10 micrograms per liter phenolics, the Director and Regional Administrator shall consider: the rate of any multi-aquifer flow; the quality of any water being leaked; the likely fate and impacts of any leaking contaminants, considering ground water flow and use patterns in the aquifer(s) of concern and the impact of any gradient control well (s); and the cost of abandoning the

leaking well(s). Based on this evaluation, the Director and Regional Administrator may require Reilly to abandon or reconstruct the well(s). If Reilly abandons an active well, Reilly shall provide an alternative water supply which provides water of equivalent quality and quantity at a cost to the owner of the affected well no greater than that of pumping ground water from the affected well.

10.1.4. Well Abandonment Plan

If the Director and Regional Administrator determine pursuant to Section 10.1.3. that Reilly shall abandon or reconstruct any wells, then Reilly shall submit to the Director and Regional Administrator, within 90 days of such notification, a plan for abandoning or reconstructing the well(s) specified by such notification and, if necessary, providing the well owner(s) with an alternative water supply. The Director and Regional Administrator shall jointly review the plan in accordance with Part F. of the Consent Decree.

10.1.5. Well Abandonment

Within 90 days of approval of the plan specified in Section 10.1.4., Reilly shall abandon or reconstruct the well(s) required in accordance with the approved plan.

10.2. Multi-aquifer Wells Open to the St. Peter Aquifer

10.2.1. Investigation Plan

Within 180 days of the decision by the Regional Administrator and the Director with regard to remedial action

in the St. Peter aquifer referenced by Section 8.3.1., Reilly shall submit to the Regional Administrator and the Director a plan for investigating suspected multi-aquifer wells which are open to the St. Peter aquifer [] and which may be leaking water exceeding drinking water criteria for PAH or 10 micrograms per liter phenolics into areas of the St. Peter aquifer located outside of the capture area of any ST. Peter aquifer gradient control system operated pursuant to Section 8.2. The plan shall describe the investigation techniques to be used. The Regional Administrator and Director shall jointly review the plan in accordance with Part F. of the Consent Decree.

10.2.2. Investigation and Report

Within one year of approval of the investigation plan pursuant to Section 10.2.1., Reilly shall conplete a multi-aquifer well investigation in accordance with the approved plan and shall report the findings to the Regional Administrator and the Director and recommend which leaking multi-aquifer wells, if any, should be abandoned or reconstructed.

10.2.3. Report Evaluation

For any of the wells investigated pursuant to Section 10.2.1. which display interaquifer flow of water which exceeds drinking water criteria for PAH or 10 micrograms per liter phenolics, the Director and REgional Administrator shall consider: the rate of any multi-aquifer flow; the quality of

any water being leaked; the likely fate and impacts of any leaking contaminants, considering ground water flow and use patterns in the aquifers(s) ofa concern and the impact of any gradient control well(s); and the cost of abandoning the leaking well(s). Based on this evaluation, the Director and Regional Administrator may jointly require Reilly to abandon or reconstruct the well(s). If Reilly abandons an active well, Reilly shall provide an alternative water supply which provides water of equivalent quality and quantity at a cost to the owner of the affected well no greater than that of pumping ground water from the affected well.

10.2.4. Well Abandonment Plan

If the Director and Regional Administrator determine pursuant to Section 10.2.3. that Reilly shall abandon or reconstruct any wells, then Reilly shall submit to the Director and Regional Administrator, within 90 days of such notification, a plan for abandoning or reconstructing the well(s) specified by such notification and, if necessary, providing the well owner(s) with an alternative water supply. The Director and Regional Administrator shall jointly review the plan in accordance with Part F. of the Consent Decree.

10.2.5. Well Abandonment

Within 90 days of approval of the plan specified in Section 10.1.4., Reilly shall abandon or reconstruct the well(s) required in accordance with the approved plan.

10.3. Contingent Actions

10.3.1. Investigation Plan

If the capture area of any gradient control well systems installed in the Prairie du Chien-Jordan or the St. Peter aquifers decreases as a result of ceasing operation of decreasing pumping rates in accordance with this RAP, the Director, the Commissioner, and the Regional Administrator may jointly require Reilly to submit a plan to investigate any multi-aquifer wells which may be leaking water exceeding the drinking water for PAH or 10 micrograms per liter phenolics into areas of the aquifer that were formerly controlled by the gradient control well system. The Regional Administrator and Director shall review the plan in accordance with Part H of the Consent Decree.

10.3.2. Investigation and Report

Within one year of approval of the investigation plan pursuant to Section 10.3.1., Reilly shall complete a multi-aquifer well investigation in accordance with the approved plan and shall report the findings to the Regional Administrator and the Director and recommend which leaking multi-aquifer wells, if any, should be abandoned or reconstructed.

10.3.3. Report Evaluation

For any of the wells investigated pursuant to Section 10.3.1. which display interaquifer flow of water which exceeds

drinking water criteria for PAH or 10 micrograms per liter phenolics, the Director and Regional Administrator shall consider: the rate of any multi-aquifer flow; the quality of any water being leaked; the likely fate and impacts of any leaking contaminants, considering ground water flow and use patterns in the aquifer(s) of concern and the impact of any gradient control well(s); and the cost of abandoning the leaking well(s). Based on this evaluation, the Director and Regional Administrator may jointly require Reilly to abandon or reconstruct the well(s). If Reilly abandons an active well, Reilly shall provide an alternative water supply which provides water of equivalent quality and quantity at a cost to the owner of the affected well no greater than that of pumping ground water from the affected well.

10.3.4. Well Abandonment Plan

If the Director and Regional Administrator determine pursuant to Section 10.3.3. that Reilly shall abandon or reconstruct any wells, then Reilly shall submit to the Director and Regional Administrator, within 90 days of such notification, a plan for abandoning or reconstructing the well(s) specified by such notification and, if necessary, providing the well owner(s) with an alternative water supply. The director and Regional Administrator shall jointly review the plan in accordance with Part F. of the Consent Decree.

10.3.5. Well Abandonment

Within 90 days of approval of the plan specified in Section 10.3.4., Reilly shall abandon or reconstruct the well(s) required in accordance with the approved plan.

11.

NEAR-SURFACE CONTAMINATION

11.1. Soil Investigation

11.1.1. Plan

Within 90 days of the effective date, Reilly shall submit to the Director and the Regional Administrator a plan for installation of shallow borings and analysis of resulting soil cores for the purpose of determining the extent of subsurface contamination south of the site. The plan shall provide for borings in an area bounded by Lake Street on the north; Monitor Street and an imaginary straight-line extension of Monitor Street to Methodist Hospital on the east; Minnehaha Creek on the south; and Taft Avenue and an imaginary straight-line extension of Taft Avenue to Minnehaha Creek on the west. The plan shall provide for at least 15 but not more than 25 borings, each boring to have a depth of at least 35 feet but not deeper than the top off the Platteville formation. The plan shall provide for at least 15 but no more than 45 soil cores to be analyzed for benzene extractables and/or phenolics. The Director and Regional Administrator will jointly review the plan in accordance with Part F. of the Consent Decree.

11.1.2. Completion

Within 90 days of approval of the plan in accordance with Part H. of the Consent Decree, Reilly shall complete

installation and analysis of the borings in accordance with 11.1.1. above.

11.1.3. Report

Within 60 days of completing installation of borings as required by Section 11.1.2. above, Reilly shall submit to the Director and Regional Administrator a report on the results of the above borings, including, but not limited to a map of the area investigated, the location of each boring, boring logs, analytical results, and visible or olfactory observations of contamination.

11.2. Notices in Deed

Within 180 days of completing the installation of borings as required by Section 11.1. above, the City shall file with the Recorder of Deeds of Hennepin County a notice in deed for all properties owned by the City, the HRA, or an agency of the City on which a release of contaminants or pollutants resulting from operations at the site has occurred or is occurring. Such a notice shall be in compliance with Minn. Stat. § 115B.16 subd. 2 (1984). The City shall also by this date submit to the Director and the Regional Administrator the location and owners of other properties within the areas described in 11.1. above on or under which a release has occurred or its continuing the occur.

11.3. Louisiana Avenue/State Trunk Highway 7 Intersection

11.3.1. Construction

This RAP shall not be construed to impede or delay the construction of an at-grade intersection at Louisiana Avenue and State Trunk Highway 7 in accordance with plans and specifications for this project on file with the MPCA as of September 20, 1984 [update]. If the plans and specifications for this project are changed so as to substantially alter the impact of the construction on soil or groundwater pollution, the City shall obtain written approval of these changes by the Director and Regional Administrator prior to implementing such changes.

11.3.2. Dewatering

If construction plans of the Minnesota Department of Transportation for the project specify the dewatering of any soils, the City shall provide means for collecting any contaminated water resulting from dewatering in this area and for disposal to the sanitary sewer, unless agreed otherwise by the Director and Regional Administrator.

11.3.3. Cancellation or Delay

If the Director notifies Reilly that the Minnesota Department of Transportation has not or will not have committed funds by October 31, 1989, for construction of an at-grade intersection at Louisiana Avenue and State Trunk Highway 7; or,

if the City prior to this date notifies Reilly that it will not seek funding for construction of this intersection, Reilly shall submit to the Director and Regional Administrator within six months of such notification a plan to fill, grade, and cover the former swamp between Walker Street and Lake Street in order to promote drainage and minimize infiltration of precipitation. The plan shall provide for:

(A) filling of remaining bog with clean fill;

(B) covering undeveloped areas within the area bounded by Walker Street, Louisiana Avenue, Lake Street and South Frontage Road Extension, and an imaginary north-south line through the intersection of Walker Street and West 37th Street with a low-permeability cover and sufficient topsoil to support a vegetative cover;

(C) sloping the area to promote drainage to a storm water collection system; and

(D) establishment and maintenance of a perennial grass cover.

The plan shall show the proposed placement of fill and shall detail arrangements with property owners. The Director and Regional Administrator will jointly review the plan in accordance with Part F. of the Consent Decree. Within 6 months of approval, Reilly shall implement the plan as approved by the Director and Regional Administrator.

11.4. Final Development of the Site

Final development and use of the site shall be determined by the MPCA, EPA, HRA, and the City. [plus Grundler's proposed language of 5/15]

12.

CONTINGENT ACTIONS FOR MUNICIPAL DRINKING WATER

12.1. Contingent Monitoring [ ]

12.1.1. Exceedance of Advisory Levels If the analytical result of any sample taken from an active municipal drinking water well under the monitoring requirements of Part 3 or Sections 4.3, 5.2., 6.2.1., 7.3., or 8.4. above exceeds an advisory level, Reilly shall take another sample within seven days of receiving the analytical results and analyze this sample. If the results of the second sample are below the advisory levels, a third sample shall be taken by Reilly within seven days of receiving the results of the second sample. If the third sample is below the advisory levels, monitoring of the affected well shall revert to its normal schedule. If the analytical result of the second or third sample exceeds an advisory level, the Director, Commissioner and the Regional Administrator shall be notified by Reilly immediately. Subsequent samples shall be taken by Reilly monthly until such time as either: (A) three consecutive samples yield results less than the advisory levels, in which case the sampling interval shall revert to the level specified for the affected well in Part 3 or Section 4.3., 5.2., 6.2.1., 7.3., or 8.4. above; or (B) a sample yields results greater than a drinking water criterion for PAH, in which case the requirements of Section 12.1.2., below, apply.

12.1.2. Exceedance of Drinking Water Criteria

(A) If the analytical result of any sample taken from any active ~~St. Louis Park~~ Hopkins or Edina municipal drinking water well exceeds the drinking water criterion for carcinogenic PAH, benzo(a)pyrene and dibenz(a,h)anthracene, or other PAH, the Director, Commissioner and the Regional Administrator shall be immediately notified by Reilly, and another sample shall be taken by Reilly within three days of receiving the results of the first sample and analyzed. If the analytical result of the second sample is less than the drinking water criteria for PAH but greater than an advisory level, a third sample shall be taken by Reilly within seven days of receiving the results of the second sample and analyzed. If the results of this third sample are less than the drinking water criteria, but greater than the advisory level, Reilly shall comply with the sampling frequency specified in Section 12.1.1. above.

(B) If the analytical result of the second or third sample taken pursuant to Section 1.1.2. above is greater than the drinking water criterion for carcinogenic PAH, benzo(a)pyrene and

dibenz(a,h)anthracene, or other PAH, Reilly shall monitor the well weekly until such time as either: (1) three consecutive samples yield results below drinking water criteria for PAH, in which case monitoring of the well shall revert to the normal schedule (including advisory level monitoring as specified by Section 12.1.1. above if applicable); or, (2) three consecutive samples yield results above a drinking water criterion for PAH, in which case Reilly shall immediately notify the Director, Commissioner and the Regional Administrator. The Commissioner may then require the affected well to be taken out of service, in which case Reilly shall undertake the contingent actions specified in Section 12.1. below.

12.1.3. Analytical Turn-around Time

All monitoring conducted pursuant to Section 12.1. shall be on a 21-day turn-around time basis in accordance with Section 2.8.

12.2. Contingent Drinking Water Treatment

12.2.1. Applicability

This part shall apply in the event that monitoring of active municipal water supply wells in the Mt. Simon-Hinckley, Ironton-Galesville, Prairie du Chien-Jordan, or St. Peter

aquifers, pursuant to Section 12.1. above, indicates that untreated water from any such well exceeds a drinking water criterion for PAH at the point at which the water is introduced to the water distribution system but before dilution with water from any other source. This part does not apply to SLP 10 and 15, which have specific requirements contained in Part 4. above.

12.2.2. Options for Dealing with Contaminated Municipal Drinking Water Supply Wells

In the event the conditions specified in Section 12.1.2.(B) above are met, the Commissioner may require the affected well to be removed from service, in which case Reilly shall submit to the Director, Commissioner and the Regional Administrator a plan for responding to the well closure. The plan may recommend that the well be left out of service, in which case the potential effects of altered migration of contaminants in the affected aquifer due to elimination of pumping the well shall be assessed, and proposed remedy for these effects shall be included. In addition, Reilly shall propose a remedy for restoring the lost water supply through treatment or providing alternative supplies. If Reilly proposes treatment, [] a conceptual design for a treatment system shall be included in the plan. In the event that well SLP 6 is determined to be contaminated pursuant to Section 12.1.2.(B), Reilly shall submit a plan for treatment of this well so that the pumping stress at this well is maintained.

12.2.3. Construction and Agency Approval

The Director, Commissioner, and Regional Administrator shall jointly review the proposed remedial action, taking into account the water supply needs of the affected city as well as the effectiveness of the proposed remedy in removing contaminants from drinking water, if applicable, and the effect of the proposed remedy on the movement of contaminants in the aquifer. Reilly shall construct the remedy as jointly approved by the Director, Commissioner and the Regional Administrator in accordance with Part F. of the Consent Decree.

12.2.4. Monitoring

Reilly shall monitor any treatment system constructed pursuant to this Section in accordance with the monitoring plan as jointly approved by the Regional Administrator and the Director in accordance with Part F of the Consent Decree.

12.2.5. Cessation

Reilly shall operate and maintain any treatment system constructed pursuant to this Section until the cessation criterion defined in Section 4.4 are met.